

The Rufford Foundation Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Prashant M. Hedao
Project title	Integrated Conservation Planning in the Human-Dominated Landscape of a Global Biodiversity Hotspot—Kodagu District of the Western Ghats, India
RSG reference	
Reporting period	October 2014 – December 2015
Amount of grant	£4900.00
Your email address	pmhedao@ucdavis.edu
Date of this report	January 03, 2016

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Building a geospatial data library for various disciplines of geography (physical, human and political) for central Kodagu district, and some areas beyond		90%		I put together spatial data for my study area Kodagu district that was necessary for geospatial analysis and understanding of major issues related to conservation. These spatial data layers included (to name a few) administrative boundaries - district, taluk (sub-district), village (smallest administrative unit in India), village points (settlements), roads, forests and protected areas, human population (demography), land use land cover for several years (historic and current), elephant-human conflict and several others. These data layers came from various sources such as Kodagu Circle, Karnataka State Forest Department (KFD), Karnataka State Council for Sciences & Technology (KSCST), Esri, Asian Nature Conservation Foundation (ANCF, Bangalore), Centre for Ecological Sciences at Indian Institute of Science (CES, IISc), Indian Space Research Organization (ISRO), Tata Coffee in Kodagu. While putting together these data layers I personally built good connections with these organisations and within themselves which would be good for these organisations in future collaborations as well. There were some data layers that I would have liked to have such as distribution of large farmers (owning more than 10 acres) vs small farmers (0-5 & 5-10 acres) across the district at village level, which currently is only available at the Taluk (sub-district) level. The elephant-human conflict (EHC) affects the small farmers differently as against large farmers. Also, more detailed data on crop types grown at village level would have been useful, and again this data is only available at the Taluk level.
Field interviews and community consultations		75%		I conducted several interviews with officials from KFD (at district level) and also with government officials who work at district headquarters and are responsible for land records, environment, agriculture, etc. I also

			<p>conducted interviews with several small individual farmers and also community leaders who represented small farmers. Other than that I also had several interviews with individual large farmers, speciality farmers, interacted with social scientists /researchers who were working with tribal populations in Kodagu district. I had a good day-long, joint consultation meeting with almost all officials of KFD from the district, about what they have done so far for EHC, and what they are planning on doing in future. I also had a consultation meeting with farmers from the most affected area in the district. This meeting was also attended by KFD officials. In this consultation meeting I presented the overall and future scenario of the district that was prepared using spatial data and analysis such as, changes in demography, urbanisation, tourism and EHC. This presentation served as a good trigger for them to agree to work together to resolving not just EHC with the KFD officials but also other issues. I would have liked to have a couple more consultation meetings at a local scale (probably village level) to work on local planning-based solutions using Geodesign processes and analysis. I plan on doing this as a pilot in a few of the worst affected villages.</p>
Landscape analysis and modelling using Geodesign		75%	<p>As mentioned above, I have put together several spatial data layers and through my field work, literature review and interaction with various professors and researchers in Bangalore, Delhi, Kodagu, and other places in India, designed a good analysis framework for urbanisation, infrastructure development and EHC. There are still some data layers missing such as distribution of large and small farmers and crop data which would have made this analysis more robust. Having said that, I have been able to perform a good analysis with the data that I compiled.</p>

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

Sharing spatial data and maps in India is a big challenge because of concerns of national security. This comes from the archaic laws that govern India's apex mapping agency, the Survey of India (SoI). Getting authoritative administrative boundaries for district, taluk (sub-district) and especially the

village boundaries, is a challenge and almost everyone ends up procuring paper maps and digitising them manually. This results in multiple copies of these digitised administrative boundaries in various coordinate systems floating around, because of which data matching is a challenge especially if data is acquired from various sources and not from a single source. Since I was based at Indian Institute of Science (IISc) in Bangalore, which is a premier scientific institution in India, I was able to connect with the Karnataka State Council for Science and Technology (KSCST), located in IISc campus. KSCST is the agency that assists the Karnataka state government with all spatial base data layers, and because my project was based out of IISc, they made an exception and shared their base data with me.

To get access to the data on compensation paid for crop damages to farmers who suffered damages because of the Elephant Human Conflict (EHC) from the Karnataka Forest Department (KFD) was challenging for a different reason – the way their data is organised. It is collected at the “Range level” and then consolidated at “Division level” and only a consolidated summary of that is available at the “Circle (district) level”. While interacting with KFD officials in Kodagu district, I was able to show them a sample analysis (using older data) of what I was planning on doing, and that convinced them to share their data with me as long as I shared my analysis and outcomes with them. The Chief Conservation of Forests (CCF) of Kodagu district asked his subordinates to consolidate all crop damage compensation data for all 300+ villages for the past 10 years and give it to me in the format I had requested. They also shared their reports on what they had done so far to deal with the EHC such as construction of elephant proof trenches (EPTs), solar fences, railway track barriers, concrete walls, etc. I would say that while working in Kodagu I was able to build trust with KFD officials and because of that they were willing to share their data with me.

3. Briefly describe the three most important outcomes of your project.

- a) I was able to build a consolidated geospatial library for the district, and I believe it will be very helpful to anyone who wants to work in Kodagu district in the future. The analysis I was able to put together because of the geospatial library could be a starting point for several future projects.
- b) I did build a good working relationship with the KFD officials, several groups representing the interests of environment such as Coorg Wildlife Society (CWS), small farmers, tribal groups and some of big players in coffee growing business in the region such as Tata Coffee Limited. This helped me in understanding the diverse perspectives of these groups and how the EHC affects them differently. This information was very essential for the analysis for the participatory planning framework.
- c) I networked and was able to connect with several diverse groups from outside of Kodagu as well such as researchers, professors and NGOs who are working on different aspects of the region such as economy, infrastructure, demography, coffee markets, tribal issues, labour issues, urbanisation, tourism, etc. This was very helpful for me in understanding the district as a whole and where it would be in 10 or 20 years. Again, this is very essential for convincing the community to participate in a participatory planning process.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

My project is essentially to use mapping based Geodesign framework to project the “future scenarios” of the district using indicators such as urbanization, changes in demographic patterns,

increase in tourism and EHC. These scenarios will be presented to the communities in consultation meetings and based on experience from other areas, this is going to be an important tool to bring them together into a participatory planning process to plan for the future of the district.

What transpired was that even before creating the scenarios, rather just presenting the “idea of future scenarios” and possible solutions to the community itself was instrumental in getting the community to agree that they need to work together with the government if they want the district to develop according to their aspirations. In the consultation meeting the forest department officials were surprised to hear this from the community, who otherwise blamed them for not doing enough to keep the elephants inside the forests. The willingness of the community to participate in a planning process comes from the fact that the community has lived there for generations and is well aware of the various geographies of the district and its trends. They are also aware of the consequences of “business as usual” if they didn’t do something together based on their aspirations. But they are so involved in day-to-day issues which flare up from time to time after any death or a serious injury because of EHC that they are not able to keep their eyes on the long-term scenario.

This also highlights the “role of a planner” which is not limited to being one who brings all physical, human and political geography data together and is the “master planner” for the region. In addition, it is of someone who is still an outsider but is able to focus on the larger picture without getting carried away too much by day-to-day issues and acts like a catalyst that brings the community together. The planner should definitely have a good understanding of day-to-day issues that the communities have to face. This is in line with the Geodesign framework where the planner or planning is more of a collaboration among design professionals, geographical sciences, information technologies, and people of the place.

While at IISc, Bangalore, I also did capacity building in GIS and spatial analysis for fellow researchers and PhD students and facilitated ArcGIS software donation from Esri Conservation Program. Along with Google-India, I organised a field data collection workshop using ODK (Open Data Kit – <https://opendatakit.org/>).

I also gave a presentation at a National seminar on “The Changing Scenario of Indian Agriculture – Special Reference to Land Reforms” at Cauvery College in Kodagu on “The Future of Sustainable Agriculture. I also interacted with faculty there and at Forestry College on use of GIS in landscape analysis.

5. Are there any plans to continue this work?

I am currently in the writing phase of my PhD dissertation and I have plans to continue this project after that. I am planning on being back at IISc at the end of summer of 2016 and take this work forward. I have some funds left from this grant that were specifically earmarked for consultation meetings. I would like to use them for the village level consultation meetings in villages that are worst affected by EHC, based on my hotspot analysis of the conflict data. Planning is not a short-term intervention especially when it is participatory in nature and to make it effective it has to be refined while being in the field and working with the community. It is an interactive process along with the community based on their feedback. It is an iterative process as well.

6. How do you plan to share the results of your work with others?

I plan to share my geospatial data and analysis with KFD officials for them to use in their planning of future investments for handling of EHC. I also plan on sharing the same with organisations representing various local interest groups such as small farmers, and with other researchers who are interested in working in Kodagu district.

I am working with Esri based in Redlands, California (<http://www.esri.com>) for creating a *Storymap* (<http://storymaps.arcgis.com/en/>) based application for dissemination of my analysis. With Esri, I am also exploring the possibility of using *GeoPlanner* (<http://geoplanner.arcgis.com/>) to develop an application which would allow people to do their own analysis online using my data and other datasets that users could bring in or use other online available data. I would like to use part of my unspent budget for developing *Storymap* and tools in *GeoPlanner* which will be useful for village level consultation meetings (mentioned in #5 above).

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

The Rufford Foundation grant was used from October 2014 through July 2015. The geospatial analysis work continued beyond that and I am still working on refining it. I believe that for the project to yield some good results it should go on until mid-2017 for the community and KFD to benefit and as a researcher to get a deeper understanding of the EHC along with other development work and demographic changes happening in Kodagu district. As mentioned earlier I have some unused funds left from this grant and I would like to use them for more village level consultation meetings after finishing some initial work of developing *Storymap* and analysis tools in *GeoPlanner*.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Round trip airfare from Sacramento CA (USA) to Bangalore (India) and other travel related expenses	£900	£900	0	Half the budget was used for one-way travel from Bangalore to Sacramento, remainder of the budget was used for local internal travel within India for meetings with government officials, experts, researchers and NGOs, studying planning case studies. This involved travel between Bangalore and Delhi, Mumbai, Pune, Pondicherry and Goa. This reallocation was conveyed to and was approved by Ms. Jane Raymond over email.
Subsistence Cost for travel	£1200	£1200	0	I ended up staying longer in Bangalore

and stay in Bangalore at IISc for 6 months @ £400 per month				for collecting geospatial data and connecting with researchers and NGOs who had/were still working in Kodagu. The additional expense of my longer stay in Bangalore of £2400 was covered by Centre for Ecological Sciences, IISc.
Subsistence Cost for fieldwork stay in Kodagu, Karnataka for 6 months @ £200 per month	£200	£200	0	The additional expense of my stay in Kodagu of £1000 was covered by Asian Nature Conservation Foundation (ANCF), Bangalore
Local travel for fieldwork in Kodagu, Karnataka 6 months @ £100 per month	£600	£600	0	
Stakeholder consultation meetings 4 meetings) @£400 - includes the cost of travel, food, meeting room, stay, etc. for participants	£1600	0	+£1600	Most of my consultation meetings were supported by the KFD (hosting & local expenses) and Tata Coffee Ltd. (hosting and local expenses) and ANCF, Bangalore (see note below)
Telephone, Internet access, map printing (large format), supplies, etc. for a year	£400	£400	0	I also received some logistical support from Centre for Ecological Sciences, IISc, Bangalore & ANCF, Bangalore
Total	£4900	£3300	£+1600	Exchange rate – £1 = INR100

I would like to add that because of the Rufford grant, I was also able to raise some funds and in-kind support locally to cover other expenses that I incurred because of my extended stay. I had originally planned on staying in Kodagu district and Bangalore for about 8-10 months, instead I ended up staying for about 15 months and the additional expenses of stay and travel was covered by CES/IISc, ANCF and I got some in-kind support from KFD and Tata Coffee Ltd during consultation meetings.

9. Looking ahead, what do you feel are the important next steps?

As mentioned earlier, I would like to go back and work on a consultation meeting at village level for couple of villages as a pilot that are worst affected by EHC and work with the community on planning based solutions at local level.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

I have mentioned Rufford Foundation in my opening slide of several presentations that I have made here at UC Davis and at IISc Bangalore. I also highlighted it in the presentation I made in July 2015 at Esri International User Conference in San Diego, California. I am a featured speaker at the forthcoming Geodesign Summit (<http://www.geodesignsummit.com/agenda/agenda.html>) at Esri-Redlands, California later this month on January 28th, and I will again have Rufford Foundation name as a major donor of my work, in my opening slide.



I plan on putting Rufford Foundation logo on the *Storymap* that I am working on with Esri which will be hosted at Esri's ArcGIS online site. And it will be mentioned in my scientific publications and reports that I intend to publish and distribute widely.

Other than that, I have talked about Rufford Foundation's support for my project at various meetings and in my interactions with government officials, NGOs, researchers.

11. Any other comments?

As mentioned earlier I would like to continue this work after I am done with my PhD here at UC Davis, and for that would like your permission to use the remainder of my money from RSGF for developing the *Storymap* and *GeoPlanner* based analysis tools which will be helpful in village level consultation meetings that I am proposing. This will go a long way in evolving planning-based solutions with the local community and KFD officials on major issues of concern such as EHC, sustainable tourism and urbanization, infrastructure, which will benefit conservation.